Remarks

The Office Action mailed July 5, 2007 has been carefully reviewed and the foregoing amendment has been made in consequence thereof.

Claims 1-20 are now pending in this application. Claims 1-20 stand rejected.

The rejection of Claim 1 under 35 U.S.C. § 103(a) as being unpatentable over Ramos Fernandez et al. (U.S. Patent No. 5,592,031) (hereinafter referred to as "Ramos Fernandez") in view of Walker (U.S. Patent No. 5,081,411) (hereinafter referred to as "Walker") is respectfully traversed.

Ramos Fernandez describes a switching system for high voltage pulses of high instantaneous current. The system includes a power source (V_P), three polarization circuits, a main switching channel (A-B), and a current switch (CBT). The power source (V_P) polarizes the main switching channel (A-B). Each polarization circuit is coupled between the power source (V_P) and the main switching channel (A-B) and includes a resistor (R_1, R_2, or R_3) and an inductor (L_1, L_2, or L_3). The main switching channel (A-B) includes two rectifier sets (GR_1 and GR_2) conductive in opposite directions and a capacitor (C_1) coupled to each rectifier set (GR_1 or GR_2). The rectifier sets (GR_1 and GR_2) are each formed using a diode network (RD_1 and RD_2, respectively) which may include "semiconductors such as diodes, bipolar transistors, thyristors, triacs or MOS transistors." Column 4, lines 10-17. When the current switch (CBT) is open, the switching system provides a high impedance to a bipolar signal (V_1 and V_2). When the current switch (CBT) is closed, the switching system provides switching for a high voltage current.

Walker describes an electrical system that controls a load from an AC or DC source by a two-wire connection while a sensor simultaneously monitors a predetermined condition. More specifically, when the load is at a first operating state, the load performs its intended function and the system and/or load are monitored with the sensor using stored electrical energy. When the load is at a second operating state, impedance of an electronic switch (28) is raised to power the sensor and to allow electrical energy to be stored. The electrical system includes the electronic switch (28), a resistor (29), a gating circuit (30), a sensor circuit (32), a storage circuit (34), and a regulator circuit (36). The regulator circuit (36) regulates voltage within the system and includes a metal oxide varistor (24), a full wave bridge rectifier (26), a

dual diode rectifier (26), a switching regulator (37), a voltage regulator (39), and visual indicator circuitry (40). The full wave bridge rectifier (26) includes diodes (D1-D4), and the dual diode rectifier (26) includes diodes (D5 and D6). The switching regulator (37) includes resistors (40, 42, 44, 46, 48, 50, 52, 54, 56, and 58), capacitors (60, 62, and 64), field effect transistors (FETs) (66 and 68), an inductor (70), an operational amplifier (72), a dual diode rectifier (74), transistors (76 and 78), and a zener diode (80). During the first operating state, power is supplied through the inductor (70) to the load, and, during the second operating state, power is stored in the inductor (70). Notably, Walker does not describe nor suggest a regulator circuit that includes a capacitor, a diode, a resistor, a first inductor, and a second inductor, wherein the first and second inductors are configured such that the first inductor induces a voltage in the second inductor.

Neither Ramos Fernandez nor Walker, considered alone or in combination describes or suggest an ultrasonic diagnostic apparatus as recited in Claim 1, which recites an ultrasonic diagnostic apparatus for transmitting ultrasonic signals from ultrasonic transducers toward a subject to be examined, and receiving reflected waves of said ultrasonic signals for display, said ultrasonic diagnostic apparatus comprising "an analog switch for switching ultrasonic transducers for transmission of said ultrasonic signals and reception of said reflected waves; a transmitter power source comprising a regulator circuit coupled to a power source for supplying a high voltage to a transmitter circuit for causing said ultrasonic transducers to drive said ultrasonic signals, said regulator circuit comprising a capacitor, a diode, a resistor, a first inductor, and a second inductor, wherein said first and second inductors are configured such that said first inductor induces a voltage in said second inductor; and a bias power source generating circuit for generating a bias power source for said analog switch from said transmitter power source."

More specifically, neither Ramos Fernandez nor Walker, considered alone or in combination, describes or suggests an ultrasonic diagnostic apparatus that includes a transmitter power source having a regulator circuit coupled to a power source for supplying a high voltage to a transmitter circuit for causing ultrasonic transducers to drive ultrasonic signals. Further, neither Ramos Fernandez nor Walker, considered alone or in combination, describes or suggests a regulator circuit that includes a capacitor, a diode, a resistor, a first inductor, and a second inductor, wherein the first and second inductors are configured such that the first inductor induces a voltage in the second inductor. Rather, Ramos Fernandez

describes a high-voltage switching system that includes a main switching channel having two opposite conducting diode-network rectifier sets each coupled to a capacitor, and Walker describes an electrical system for controlling a load from an AC or DC source by a two-wire connection while a sensor simultaneously monitors a predetermined condition, wherein the electrical system includes a switching regulator having a single inductor configured to supply power to a load or to store power for operation of the sensor.

Accordingly, for at least the reasons set forth above, Claim 1 is submitted to be patentable over Ramos Fernandez in view of Walker.

For at least the reasons set forth above, Applicant respectfully requests that the Section 103 rejection of Claim 1 be withdrawn.

The rejection of Claims 1, 2, 4, and 6-12 under 35 U.S.C. § 103(a) as being unpatentable over Barnes et al. (U.S. Patent No. 6,795,374) (hereinafter referred to as "Barnes") in view of Walker is respectfully traversed.

Walker is described above. Barnes describes a medical diagnostic ultrasound system (10) that controls bias voltage for an electrostatic transducer array (16). The system (10) includes a DC power supply (100) to generate a bias voltage for each electrostatic transducer element (68). A transmit bias voltage and a reception bias voltage are supplied to each element (68) such that the reception bias voltage is higher than the transmit bias voltage. In a first embodiment, each element (68) is coupled to a plurality of voltage inputs such that a first bias voltage (DC Bias 1) is applied to an element (68) during a transmit mode, and a second bias voltage (DC Bias 2) is applied to the element during a reception mode. In another embodiment, a single bias power source is controlled by a digital-to-analog converter (DAC) (70) to control the transmit bias voltage and the reception bias voltage. Barnes further describes controlling the transmit bias voltage and the reception bias voltage using switches (82 and 84) and resistors (76, 78, 80) to alter the bias voltage applied to the element (68). The transmit bias voltage and the reception bias voltage may also be controlled with a trigger signal (30 or 50) coupled to a bias voltage (36 or 56).

Neither Barnes nor Walker, considered alone or in combination describes or suggest an ultrasonic diagnostic apparatus as recited in Claim 1, which recites an ultrasonic diagnostic apparatus for transmitting ultrasonic signals from ultrasonic transducers toward a subject to be examined, and receiving reflected waves of said ultrasonic signals for display,

said ultrasonic diagnostic apparatus comprising "an analog switch for switching ultrasonic transducers for transmission of said ultrasonic signals and reception of said reflected waves; a transmitter power source comprising a regulator circuit coupled to a power source for supplying a high voltage to a transmitter circuit for causing said ultrasonic transducers to drive said ultrasonic signals, said regulator circuit comprising a capacitor, a diode, a resistor, a first inductor, and a second inductor, wherein said first and second inductors are configured such that said first inductor induces a voltage in said second inductor; and a bias power source generating circuit for generating a bias power source for said analog switch from said transmitter power source."

More specifically, neither Barnes nor Walker, considered alone or in combination, describes or suggests an ultrasonic diagnostic apparatus that includes a transmitter power source having a regulator circuit coupled to a power source for supplying a high voltage to a transmitter circuit for causing ultrasonic transducers to drive ultrasonic signals. Further, neither Barnes nor Walker, considered alone or in combination, describes or suggests a regulator circuit that includes a capacitor, a diode, a resistor, a first inductor, and a second inductor, wherein the first and second inductors are configured such that the first inductor induces a voltage in the second inductor. Rather, Barnes describes a medical diagnostic ultrasound system that applies a transmit bias voltage and a different reception bias voltage to an electrostatic transducer element, and Walker describes an electrical system for controlling a load from an AC or DC source by a two-wire connection while a sensor simultaneously monitors a predetermined condition, wherein the electrical system includes a switching regulator having a single inductor configured to supply power to a load or to store power for operation of the sensor.

Accordingly, for at least the reasons set forth above, Claim 1 is submitted to be patentable over Barnes in view of Walker.

Claims 2, 4, and 6-12 depend, directly or indirectly, from independent Claim 1. When the recitations of Claims 2, 4, and 6-12 are considered in combination with the recitations of Claim 1, Applicant submits that dependent Claims 2, 4, and 6-12 likewise are patentable over Barnes in view of Walker.

For at least the reasons set forth above, Applicant respectfully requests that the Section 103 rejection of Claims 1, 2, 4, and 6-12 be withdrawn.

The rejection of Claims 3, 5, 6, and 13-16 under 35 U.S.C. § 103(a) as being unpatentable over Barnes in view of Walker, and in view of Sato et al. (U.S. Patent No. 5,469,484) (hereinafter referred to as "Sato") is respectfully traversed.

Barnes and Walker are described above. Sato describes a solid-state imaging system that includes a charge-coupled device (CCD) (1). To supply a voltage (V_{sub}) to the substrate (22) of the CCD (1), a substrate voltage setting circuit (17) is provided. An operation voltage of the substrate voltage setting circuit (17) is provided through a charge pumping type booster circuit (16). Two voltage sources, a positive-polarity (VH) voltage source (6) and a negative-polarity (VL) voltage source (7), are coupled to the booster circuit (16) to produce a boosted output voltage to serve as the operation voltage of the substrate voltage setting circuit (17). The booster circuit (16) includes two capacitors (C1 and C2) and four switches (SW1, SW2, SW3, and SW4). More specifically, a first switch (SW1) is coupled between the first capacitor (C1) and a ground line. A second switch (SW2) is coupled between the first capacitor (C1) and the VL voltage source (7). A third and a fourth switch (SW3 and SW4) are coupled between the two capacitors (C1 and C2). The output end of the second capacitor (C2) is coupled to the substrate voltage setting circuit (17). When the opening and closing of the switches (SW1, SW2, SW3, and SW4) are timed, the boosted output voltage is equal to the absolute value of VH plus the absolute value of VL.

None of Barnes, Walker, and Sato, considered alone or in combination, describes or suggests an ultrasonic diagnostic apparatus as recited in Claim 1, which recites an ultrasonic diagnostic apparatus for transmitting ultrasonic signals from ultrasonic transducers toward a subject to be examined, and receiving reflected waves of said ultrasonic signals for display, said ultrasonic diagnostic apparatus comprising "an analog switch for switching ultrasonic transducers for transmission of said ultrasonic signals and reception of said reflected waves; a transmitter power source comprising a regulator circuit coupled to a power source for supplying a high voltage to a transmitter circuit for causing said ultrasonic transducers to drive said ultrasonic signals, said regulator circuit comprising a capacitor, a diode, a resistor, a first inductor, and a second inductor, wherein said first and second inductors are configured such that said first inductor induces a voltage in said second inductor; and a bias power source generating circuit for generating a bias power source for said analog switch from said transmitter power source."

More specifically, none of Barnes, Walker, and Sato, considered alone or in combination, describes or suggests an ultrasonic diagnostic apparatus that includes a transmitter power source having a regulator circuit coupled to a power source for supplying a high voltage to a transmitter circuit for causing ultrasonic transducers to drive ultrasonic signals. Further, none of Barnes, Walker, and Sato, considered alone or in combination, describes or suggests a regulator circuit that includes a capacitor, a diode, a resistor, a first inductor, and a second inductor, wherein the first and second inductors are configured such that the first inductor induces a voltage in the second inductor. Rather, Barnes describes medical diagnostic ultrasound system that applies a transmit bias voltage and a different reception bias voltage to an electrostatic transducer element, Walker describes an electrical system for controlling a load from an AC or DC source by a two-wire connection while a sensor simultaneously monitors a predetermined condition, wherein the electrical system includes a switching regulator having a single inductor configured to supply power to a load or to store power for operation of the sensor, and Sato describes a booster circuit that aggregates the absolute value of two input voltages into an output voltage via capacitors and timed switches.

Accordingly, for at least the reasons set forth above, Claim 1 is submitted to be patentable over Barnes in view of Walker, and in view of Sato.

Claims 3, 5, 6, and 13-16 depend, directly or indirectly, from independent Claim 1. When the recitations of Claims 3, 5, 6, and 13-16 are considered in combination with the recitations of Claim 1, Applicant submits that dependent Claims 3, 5, 6, and 13-16 likewise are patentable over Barnes in view of Walker, and in view of Sato.

For at least the reasons set forth above, Applicant respectfully requests that the Section 103 rejection of Claims 3, 5, 6, and 13-16 be withdrawn.

The rejection of Claims 17-20 under 35 U.S.C. § 103(a) as being unpatentable over Barnes in view of Walker, and in view of Sato and Decker et al. (U.S. Patent No. 5,375,051) (hereinafter referred to as "Decker") is respectfully traversed.

Barnes, Walker, and Sato are described above. Decker describes an energy conservation circuit (20) for using a serial data line to turn on an electrical device. The energy conservation circuit (20) includes a startup circuit (212), a shutdown circuit (213), a keepalive circuit (215), and a power supply switching circuit (214). An input (223) of the

startup circuit (212) is connected to a TXD pin of a media access device that is connected an asynchronous serial data line from a PCMCIA modem. A startup message from the PCMCIA modem causes transitions on the TXD pin connected inside the media access device to the input (223) of the startup circuit (212). A diode charge pump inside the startup circuit (212) uses these transitions to extract enough energy to pull down a signal input (228) of the power supply switching circuit (214). The diode charge pump includes diodes and capacitors. Decker further describes that the power supply switching circuit (214) includes a field effect transistor (FET) switch (Q42) that is a dual power P-channel enhancement mode MOSFET integrated circuit. The FET switch (Q42) is coupled to a voltage regulator (U41), a power input (227), and a power supply section output (233).

None of Barnes, Walker, Sato, and Decker, considered alone or in combination, describes or suggests an ultrasonic diagnostic apparatus as recited in Claim 1, which recites an ultrasonic diagnostic apparatus for transmitting ultrasonic signals from ultrasonic transducers toward a subject to be examined, and receiving reflected waves of said ultrasonic signals for display, said ultrasonic diagnostic apparatus comprising "an analog switch for switching ultrasonic transducers for transmission of said ultrasonic signals and reception of said reflected waves; a transmitter power source comprising a regulator circuit coupled to a power source for supplying a high voltage to a transmitter circuit for causing said ultrasonic transducers to drive said ultrasonic signals, said regulator circuit comprising a capacitor, a diode, a resistor, a first inductor, and a second inductor, wherein said first and second inductors are configured such that said first inductor induces a voltage in said second inductor; and a bias power source generating circuit for generating a bias power source for said analog switch from said transmitter power source."

More specifically, none of Barnes, Walker, Sato, and Decker, considered alone or in combination, describes or suggests an ultrasonic diagnostic apparatus that includes a transmitter power source having a regulator circuit coupled to a power source for supplying a high voltage to a transmitter circuit for causing ultrasonic transducers to drive ultrasonic signals. Further, none of Barnes, Walker, Sato, and Decker, considered alone or in combination, describes or suggests a regulator circuit that includes a capacitor, a diode, a resistor, a first inductor, and a second inductor, wherein the first and second inductors are configured such that the first inductor induces a voltage in the second inductor. Rather, Barnes describes a medical diagnostic ultrasound system that applies a transmit bias voltage

and a different reception bias voltage to an electrostatic transducer element, Walker describes an electrical system for controlling a load from an AC or DC source by a two-wire connection while a sensor simultaneously monitors a predetermined condition, wherein the electrical system includes a switching regulator having a single inductor configured to supply power to a load or to store power for operation of the sensor, Sato describes a booster circuit that aggregates the absolute value of two input voltages into an output voltage via capacitors and timed switches, and Decker describes an energy conservation circuit that includes a startup circuit having a charge pump formed from diodes and capacitors.

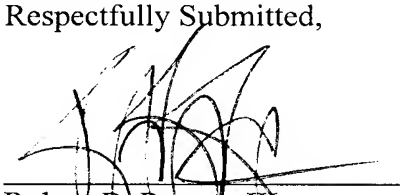
Accordingly, for at least the reasons set forth above, Claim 1 is submitted to be patentable over Barnes in view of Walker, and in view of Sato and Decker.

Claims 17-20 depend, directly or indirectly, from independent Claim 1. When the recitations of Claims 17-20 are considered in combination with the recitations of Claim 1, Applicant submits that dependent Claims 17-20 likewise are patentable over Barnes in view of Walker, and in view of Sato and Decker.

For at least the reasons set forth above, Applicant respectfully requests that the Section 103 rejection of Claims 17-20 be withdrawn.

In view of the foregoing amendment and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,



Robert B. Reeser, III
Registration No. 45,548
ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600
St. Louis, Missouri 63102-2740
(314) 621-5070